New Back-end Server for Turtle Blocks and Music Blocks
GSOC 2017 PROPOSAL

About You

What is your name?

My name is Vikram Ahuja and i am a Undergraduate student at IIIT hyderabad.

What is your email address?

My email address id vikramahuja8803@gmail.com

What is your Sugar Labs wiki username?

Vikram Ahuja

What is your IRC nickname on irc.freenode.net?

vikramahuja1001

What is your first language? (We have mentors who speak multiple languages and can match you with one of them if you'd prefer.)

My first language is Hindi, but i am comfortable in English as well.

Where are you located, and what hours (UTC) do you tend to work? (We also try to match mentors by general time zone if possible.)

I am located in Hyderabad, India(UTC + 5:30). I tend to work from 06:30 to 18:30(UTC)but it can be adjusted according to the needs of the project.

Have you participated in an open-source project before? If so, please send us URLs to your profile pages for those projects, or some other demonstration of the work that you have done in open-source. If not, why do you want to work on an open-source project this summer?

Yes. I have been contributing to Sugar Labs from last two years, was a google summer of code intern last year and was also a Google Code In mentor 2 years back. All the work i have done is mentioned on the last page of this proposal.

About your project

What is the name of your project?

The name of the project is New Backend Server for Turtle Blocks and Music Blocks.

Describe your project in 10-20 sentences. What are you making? Who are you making it for, and why do they need it? What technologies (programming languages, etc.) will you be using?

Last summer I worked on the project "Git Backend"(link contains last year's proposal, implementation videos and the necessary code) which was an exploration to create a git-like back end for projects so that they could be cloned, forked, etc. It was tested on both Turtle JS and Turtle Art. This summer, this new approach would be completely implemented(the UI will be redesigned) and deployed in the whole sugar sphere.

In the project last year the backend was made using Dulwich, which is a python library for git implementation. For the web version, a Flask was used to communicate between the JS code and the python git backend code. The git features implemented last year were clone, pull, add, status, commit, push, show commit history, revert back to a commit and show diff. This not only provided version control to a user but also enabled cross platform communication in activities. Eg: A Turtle JS backend file can also be used in Turtle Art (python version) and the work could be continued from the same point and also enabled multiple users to work on the same project.

This project is the continuation of the last year's project and will be mainly focused on UI implementations and deployment. It will be divided into three parts/deliverables:

- The first task is to redesign the UI for Web activities(Turtle JS and Music Blocks first)
- To get the backend up and running to host the repos remotely as well as locally(in case of a school server)
- Integrating this system with Sugar Journal along with the UI.

In last year's project, not much attention was paid to the UI part as it was just a functionality exploration, but in this project a pop up panel(like Planet) will be created which will contain all the git functionalities. This will not only give a cleaner look to the activity but will also simplify it for the users to use and understand git functionality.

Github is used to store remote repos and since github is just an extension of git, github repositories(remote repos) can be directly loaded into the activities, but are separate cases.

In the python version, the backend has to be integrated with the Sugar Journal. In the project last year a separate panel inside Turtle Art activity was created to load and create repos, but they were either stored in github or locally in a folder, so ability to host repos has to be implemented and has to be merged with the datastore. Think of it as a planet like feature for python activities.

Technological Details:
- Dulwich: Python library for Git functions
- Flask: Web server used for communication between web activities and python backend.

The backend API from the previous year's project with some modifications will be used. The backend was written in python and used dulwich. Flask will bind the web application with the backend. The JavaScript part will make an AJAX call to the python module and receive and process the JSON response and the python part will be able to send and receive HTTP

requests. The Turtle art code was written keeping in mind the gtk2 version and has to be updated to gtk3 version before integrating the backend with sugar journal.

What is the timeline for development of your project?

Week	Task
Community Bonding Period(5th May-30th May)	- Making mock screens for the UI for both Turtle JS and Music Blocks - Making mock screens of the panel for python activities,i.e., with the sugar journal. - Finalizing the designs with the mentor. - Finalizing which of the git features have to be exposed in the UI. - Clarifying doubts and add to my existing research. - Updating the Turtle JS backend(the one used last year) code with the current branch of Turtle JS. - Understanding the code of Sugar Journal and Datastore.
Week 1	Adding backend code with the current version of Music Blocks
Week 2	- Adding backend code with the current version of Music Blocks - Creating a planet like panel for local turtle repos(To be extended for remote github repos later), i.e., to load the turtle code.
Week 3	- Finishing up with the Git panel - Testing and bug fixes
Week 4	- Adding the Git panel to the Music Blocks activity - Get the backend up for it to host repos
Week 5	- Deliverable 1 1st Evaluation - Buffer Week
Week 6	Getting the backend up for the for JS activities.
Week 7	- Integrating local as well as remote(Github) hosting in the backend itself - Testing the backend
Week 8 and 9	- Updating Turtle Art backend version with the current version of Turtle Art Gtk3. - Start working on integration with Sugar Journal
Week 10	- Deliverable 2 - Testing and bug fixes 2nd Evaluation - Buffer Week

Week 11 and 12	● Completing integration with Sugar Journal by the end of week 12 ● Develop first pass at user manual that explains git basics and UI
Week 13	● Testing, bug fixing ● Documentation of code ● Finalize user manual
Final Week	● Buffer Week ● Testing ● Final Submission

Convince us, in 5-15 sentences, that you will be able to successfully complete your project in the timeline you have described. This is usually where people describe their past experiences, credentials, prior projects, schoolwork, and that sort of thing, but be creative. Link to prior work or other resources as relevant.

I have done a number of projects in my college till now, some of them are

- I had made an Online File System and Terminal in web2py which had basic features like copying, moving ,deleting, playing audio and videos, reading text files from both the Terminal and the UI based Filesystem. Made using Web2py, python and JS.

  https://github.com/vikramahuja1001/Online-Filesystem-Terminal

- Made a Question-Answer portal like StackOverflow.

  https://vikramahuja.pythonanywhere.com/QuestionAnswer/default/index

  It was made using web2py, python and JS.

- Made an Android Application for a Online Event Planner Company (yourevent.co) which allows users to make video invitations for their events. This project was a part of Course which took place for 12 weeks.

  https://github.com/vikramahuja1001/Invitube

- Made a 2D Carron game using OpenGL.

  https://github.com/vikramahuja1001/CarromOpenGL

- Created an 9X9 intelligent Tic Tac Toe game using python
- Created a Pacman game using python
- Created a Photo Sharing portal using Ruby on Rails.

All the above mentioned projects had strict deadlines and were completed on time. In most of these projects I had to learn the technologies first and then implement them. Also I have no commitment other than this project this summer.

You and the community

If your project is successfully completed, what will its impact be on the Sugar Labs community? Give 3 answers, each 1-3 paragraphs in length. The first one should be

yours. The other two should be answers from members of the Sugar Labs community, at least one of whom should be a Sugar Labs GSoC mentor. Provide email contact information for non-GSoC mentors.

Me: The user will benefit from it by learning the chain of commands in git and the technical benefit will be that we will have a better system which will provide an all round mobility to Sugar activities

Walter Bender: Git is the manifestation of a powerful idea that we want to expose to teachers and students. Enhancing Sugar with the ideas of versioning, sharing, and forking, along with commit messages is a big step forward for us in terms of pedagogy.

What will you do if you get stuck on your project and your mentor isn't around?

If I get stuck around somewhere I will try and find the solution on Internet. If unable to do so I will ask on the irc channel of Sugar Labs, there are many experienced developers on that channel and will also post the problem on the Sugar Labs developer mailing list and on Stack Overflow.

How do you propose you will be keeping the community informed of your progress and any problems or questions you might have over the course of the project?

I will be maintaining a blog regarding my work and will be updating it every week. Other than that i will also make a report of each week and will mail to my mentor as well as the sugar labs community so that they are informed about my progress over the course of project

<u>Miscellaneous</u>

Send us a link to a screenshot of your Sugar development environment with the following modification: when you hover over the XO-person icon in the middle of Home view, the drop-down text should have your email in place of "logout".
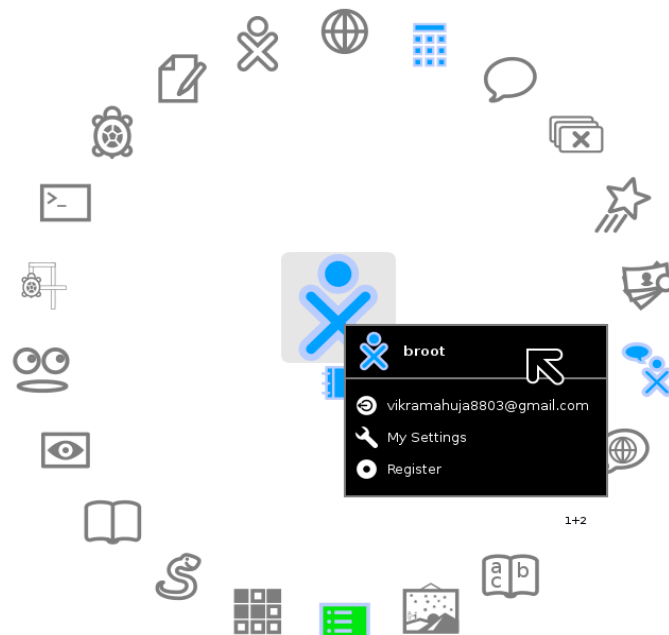
Send us a link to a pull request or merge request you have made on a Sugar or Sugar activity bug.

I have been regularly contributing to sugar labs activities. I have reported and solved many bugs

1. Fixed log10 function (**#4809**)

   Fix log10 function using base 10 algorithm - Fixes #4809

   PR - https://github.com/godiard/sugarlabs-calculate/pull/3

2. Removed the redundancy of Factorial Function (**#3531**)

   Fac() function removed - Fixes #3531

   PR - https://github.com/godiard/sugarlabs-calculate/pull/6

3. The output the input equation is not displayed correctly, for negative power (**#4810**)

   Displaying output correctly for a negative power - Fixes #4810

   PR - https://github.com/godiard/sugarlabs-calculate/pull/11

4. Fixed an infinite loop in Calculate Activity

   Input of form a+xy making the activity unreactive**

   PR - https://github.com/godiard/sugarlabs-calculate/pull/19

5. **Do not show decimal zeros if the result is an integer**

   PR - https://github.com/godiard/sugarlabs-calculate/pull/24

6. Problem of significant digits in Calculate (**#4814**)
   Fixed Significant digits with both exponential and scientific calculators. Fixes #4814

   PR - https://github.com/godiard/sugarlabs-calculate/pull/28

7. Adding Calculate functions in source/calculate.rst in help activity

   Added Calculate functions in source/calculate.rst

   PR - https://github.com/godiard/help-activity/pull/11

8. Tab numbers enhancement in Pippy

   Make Ctrl-(1-9) changes current tab to that number

   PR - https://github.com/walterbender/Pippy/pull/8

9. Pippy tabs defect

   Executing the Ctrl-w code if number of tabs is greater than 1

   PR - https://github.com/walterbender/Pippy/pull/14

10. Pippy tabs name defect

    Solved the problem of naming tabs when adding/deleting tabs

    PR - https://github.com/walterbender/Pippy/pull/16

11. **Pippy Pep8 fixes**.

    PR - https://github.com/walterbender/Pippy/pull/18

12. Tab numbers enhancement in Browse Activity

    Make Ctrl-(1-9) changes current tab to that number

    PR - https://github.com/sugarlabs/browse-activity/pull/3

13. Tab numbers enhancement in Terminal Activity

    Make Ctrl-(1-9) changes current tab to that number

    PR - https://github.com/godiard/terminal-activity/pull/11